Exercise 44

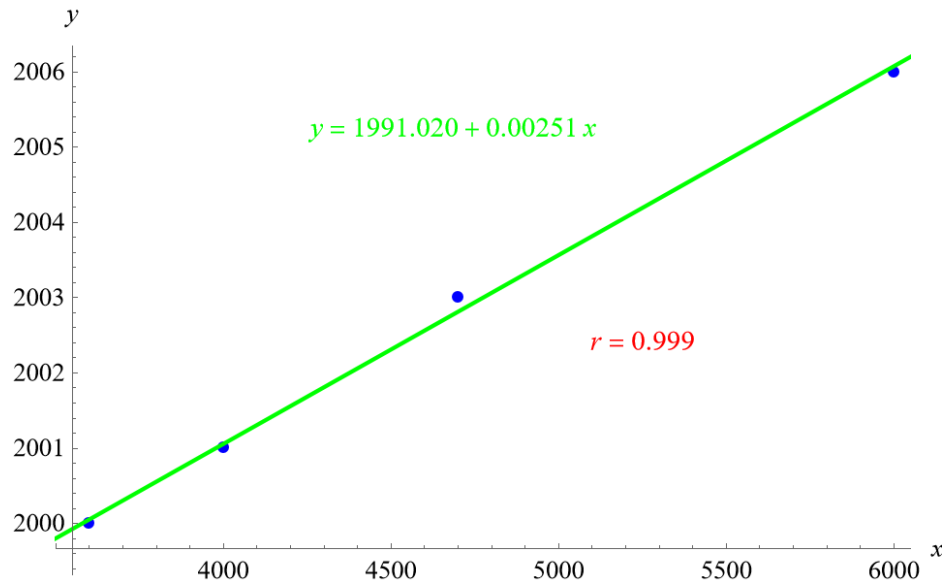
For the following exercises, consider this scenario: The population of a city increased steadily over a ten-year span. The following ordered pairs show the population and the year over the ten-year span (population, year) for specific recorded years:

$$(3{,}600, 2000); (4{,}000, 2001); (4{,}700, 2003); (6{,}000, 2006)$$

What is the correlation coefficient for this model to three decimal places of accuracy?

Solution

Plot the following points: $(3600, 2000)$, $(4000, 2001)$, $(4700, 2003)$, and $(6000, 2006)$.



Mathematica's FindFit function gives

$$y = 1991.020 + 0.00251x$$

for the line of best fit. The Correlation function in Mathematica gives a correlation coefficient of

$$r = 0.999$$

to three decimal places.